

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Withdrawn) A method of producing a multiple cell battery, the method comprising:
winding a first battery cell a plurality of turns around a mandrel; and
winding a second battery cell a plurality of turns around the first battery cell.
2. (Withdrawn) The method as defined in claim 1 further comprising coupling the first and second battery cells in series.
3. (Withdrawn) The method as defined in claim 2 further comprising:
extending an anode layer of the first battery cell beyond an electrolyte layer of the first battery cell in a first axial direction;
extending a cathode layer of the first battery cell beyond the electrolyte layer of the first battery cell in a second axial direction;
extending an anode layer of the second battery cell beyond an electrolyte layer of the second battery cell in the second axial direction; and
extending a cathode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the first axial direction.
4. (Withdrawn) The method as defined in claim 3 further comprising electrically coupling the cathode layer of the first battery cell to the anode layer of the second battery cell.
5. (Withdrawn) The method as defined in claim 4 further comprising:
separating the first battery cell from the second battery cell by a layer of insulating material;
extending the insulating material in the first axial direction beyond the anode layers of the first battery cell;

coating axial ends of the multiple cell battery with conductive material;

removing a portion of the conductive material from an end in the first axial direction to electrically isolate the anode layer of the first battery cell from the cathode layer of the second battery cell.

6. (Withdrawn) The method as defined in claim 5 wherein removing a portion of the conductive material further comprises brushing away the conductive material until a portion covering the anode layer of the first battery cell is separated from a portion covering the cathode layer of the second battery cell by the insulating material.

7. (Withdrawn) The method as defined in claim 5 further comprising:

extending a portion of the anode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the second axial direction, the portion of the anode layer beyond the electrolyte electrically isolated from the electrolyte layer;

extending a portion of the cathode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the first axial direction, the portion of the anode layer beyond the electrolyte electrically isolated from the electrolyte layer;

extending a portion of the anode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the first axial direction, the portion of the anode layer beyond the electrolyte electrically isolated from the electrolyte layer; and

extending a portion of the cathode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the second axial direction, the portion of the cathode layer beyond the electrolyte electrically isolated from the electrolyte layer.

8. (Withdrawn) The method as defined in claim 5 further comprising:

refraining from extending the anode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the second axial direction;

refraining from extending the cathode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the first axial direction;

refraining from extending the anode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the first axial direction; and

refraining from extending the cathode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the second axial direction.

9. (Withdrawn) The method as defined in claim 1 further comprising coupling the first and second battery cells in parallel.

10. (Withdrawn) The method as defined in claim 9 further comprising:
extending an anode layer of the first battery cell beyond an electrolyte layer of the first cell in a first axial direction;

extending a cathode layer of the first battery cell beyond the electrolyte layer of the first battery cell in a second axial direction;

extending an anode layer of the second battery cell beyond an electrolyte layer of the second battery cell in the first axial direction; and

extending a cathode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the second axial direction.

11. (Withdrawn) The method as defined in claim 10 further comprising:
coupling the plurality of turns of the anode layer of the first battery cell to create a first terminal of the first battery cell;

coupling the plurality of turns of the cathode layer of the first battery cell to create a second terminal of the first battery cell;

coupling the plurality of turns of the anode layer of the second battery cell to create a first terminal of the second battery cell; and

coupling the plurality of turns of the cathode layer of the second battery cell to create a second terminal of the second battery cell.

12. (Withdrawn) The method as defined in claim 11 further comprising:
separating the first battery cell from the second battery cell by a layer of insulating material;

extending the insulating material in the first axial direction beyond the anode layers of the first and second battery cells;

extending the insulating layer in the second axial direction beyond the anode layers of the first and second battery cells;

coating ends of the multiple cell battery with conductive material; and

removing a portion of the conductive material from ends of the multiple cell battery in the first and second axial directions to electrically isolate the first battery cell from the second battery cell.

13. (Withdrawn) The method as defined in claim 12 wherein removing a portion of the conductive material from ends of the multiple cell battery in the first and second directions to electrically isolate the first battery cell from the second battery cell further comprises brushing away the conductive material from the end of the multiple battery cell until portions of the conductive material coupled to the anode layer of the first battery cell are electrically isolated from portions of the conductive material coupled to the anode layer of the second battery cell across the insulating material.

14. (Withdrawn) The method as defined in claim 13 further comprising brushing away the conductive material from the end of the multiple battery cell until portions of the conductive material coupled to the cathode layer of the first battery cell are electrically isolated from portions of the conductive material coupled to the cathode layer of the second battery cell across the insulating material.

15. (Withdrawn) The method as defined in claim 12 wherein winding the first and second battery cells further comprises winding one of the first and second battery cells to have a greater amperage capacity.

16. (Withdrawn) The method as defined in claim 12 further comprising:

extending a portion of the anode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the second axial direction, the portion of the anode layer beyond the electrolyte layer electrically isolated from the electrolyte layer;

extending a portion of the cathode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the first axial direction, the portion of the cathode layer beyond the electrolyte layer electrically isolated from the electrolyte layer;

extending a portion of the anode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the second axial direction, the portion of the anode layer beyond the electrolyte layer electrically isolated from the electrolyte layer; and

extending a portion of the cathode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the first axial direction, the portion of the cathode layer beyond the electrolyte layer electrically isolated from the electrolyte layer.

17. (Withdrawn) The method as defined in claim 12 further comprising:

refraining from extending the anode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the second axial direction;

refraining from extending the cathode layer of the first battery cell beyond the electrolyte layer of the first battery cell in the first axial direction;

refraining from extending the anode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the second axial direction; and
refraining from extending the cathode layer of the second battery cell beyond the electrolyte layer of the second battery cell in the first axial direction.

18. (Withdrawn) The method as defined in claim 1 wherein winding the first and second battery cells further comprises winding the first and second battery cells where at least one of the first and second battery cells comprises a solid polymer electrolyte.

19. (Withdrawn) The method as defined in claim 1 wherein winding the first and second battery cells further comprises winding the first and second battery cells where at least one of the cells comprises a viscous electrolyte.

20. (Withdrawn) The method as defined in claim 19 further comprising injecting the viscous electrolyte after the winding steps.

21. (Withdrawn) The method as defined in claim 1 further comprising winding a third battery cell a plurality of turns around the second battery cell.

22. (Withdrawn) The method as defined in claim 21 further comprising coupling the first, second and third battery cells in series.

23. (Withdrawn) The method as defined in claim 21 further comprising coupling the first, second and third battery cells in parallel.

24. (Withdrawn) The method as defined in claim 21 further comprising couple two of the first, second and third battery cells in parallel.

25-64. (Cancelled).

65. (Original) A method comprising:
wrapping a plurality of turns of a battery cell to make a wound battery cell;
cutting the wound battery cell to create a stacked battery cell, the amperage capacity of the stacked battery cell based on a length of the stacked battery cell; and
removing a portion of the length of the stacked battery cell to adjust the amperage capacity of the stacked battery cell.

66. (Original) The method as defined in claim 65 wherein wrapping a plurality of turns of the battery cell to make the wound battery cell further comprises wrapping the plurality of turns of the battery cell around a substantially cylindrical mandrel thus creating a substantially cylindrical shaped wound battery cell.

67. (Original) The method as defined in claim 66 wherein wrapping the plurality of turns of the first battery cell around a cylindrical mandrel further comprises wrapping the plurality of turns of the first battery cell around a mandrel having a diameter of at least two feet.

68. (Original) The method as defined in claim 67 wherein wrapping the plurality of turns of the battery cell around a mandrel having a diameter of at least two feet further comprises wrapping

a plurality of turns of the first battery cell around the mandrel having a diameter of at least two feet and less than five feet.

69. (Original) The method as defined in claim 68 wherein wrapping the plurality of turns of the battery cell around the mandrel having a diameter of at least two feet and less than five feet further comprises wrapping the battery cell around the mandrel having a diameter of approximately three feet.

70. (Original) The method as defined in claim 66 wherein cutting the wound battery cell to create a stacked battery cell further comprises:

cutting the substantially cylindrical shaped wound battery cell on one side substantially parallel with an axis of the cylindrical shape; and

laying the cut substantially cylindrical shaped wound battery to be substantially flat to become the stacked battery cell with a circumference of the cylindrical shape becoming the length of the stacked battery cell.

71-74. (Cancelled).

75. (Original) A method comprising:

wrapping a plurality of turns of a first battery cell;

wrapping a plurality of turns of a second battery cell around the first battery cell to make a consecutively wound battery system;

cutting the consecutively wound battery system to create a stacked battery system, the amperage capacity of each cell of the stacked battery system based on a length of the stacked battery system; and

removing a portion of the length of the stacked battery system to adjust the amperage capacity each cell of the stacked battery system.

76. (Original) The method as defined in claim 75 wherein the wrapping steps further comprise:

wrapping the plurality of turns of the first battery cell around a substantially cylindrical mandrel; and

wrapping the plurality of turns of the second battery cell around the first battery cell, thus creating a substantially cylindrical shaped wound battery system.

77. (Original) The method as defined in claim 76 wherein wrapping the plurality of turns of the first battery cell around a substantially cylindrical mandrel further comprises wrapping the plurality of turns of the first battery cell around a mandrel having a diameter of at least two feet.

78. (Original) The method as defined in claim 77 wherein wrapping the plurality of turns of the first battery cell around a mandrel having a diameter of at least two feet further comprises wrapping a plurality of turns of the first battery cell around the mandrel having a diameter of at least two feet and less than five feet.

79. (Original) The method as defined in claim 78 wherein wrapping the plurality of turns of the first battery cell around the mandrel having a diameter of at least two feet and less than five feet further comprises wrapping the battery cell around the mandrel having a diameter of approximately three feet.

80. (Original) The method as defined in claim 75 wherein cutting the wound battery system to create a stacked battery system further comprises:

cutting the substantially cylindrical shaped consecutively wound battery system on one side substantially parallel with an axis of the cylindrical shape; and

laying the cut substantially cylindrical shaped consecutively wound battery system to be substantially flat to become the stacked battery system with a circumference of the cylindrical shape becoming the length of the stacked battery cell.

81. (Withdrawn) A method of producing multiple battery ropes, each rope having multiple cells, the method comprising:

winding a first set of battery cells around a mandrel, the first set of battery cells being a first battery cell in each battery rope;

cutting the first set of battery cells between them during the winding step;

winding a second set of battery cells around the first set of battery cells, the second set of battery cells being a second battery in each battery rope;

cutting the second set of battery cells between them during the winding step;

cutting the battery ropes to lay substantially flat and have a substantially rectangular shape;

separating a first battery rope, the first battery rope having multiple battery cells, from the second battery rope, the second battery rope having multiple battery cells.

82. (Withdrawn) The method of producing multiple battery ropes as defined in claim 81 further comprising cutting one of the first and second battery ropes to have a shorter length to adjust the amperage capacity.

83. (Withdrawn) The method of producing multiple battery ropes as defined in claim 81 wherein cutting the first set of battery cells between them during the winding step further comprises pulling anode and cathode material of the first set of battery cells over a razor during the winding process.

84. (Withdrawn) The method of producing multiple battery ropes as defined in claim 83 further comprising, during the winding a first set of battery cells around a mandrel, winding a plurality of electrolyte layers between the anode and cathode material, the electrolyte layers centered between dielectric lanes in the anode and cathode material defining the first and second battery ropes.

85. (Withdrawn) The method of producing multiple battery ropes as defined in claim 81 wherein cutting the second set of battery cells between them during the winding step further comprises pulling anode and cathode material of the second set of battery cells over a razor during the winding process.

86. (Withdrawn) The method of producing multiple battery ropes as defined in claim 85 further comprising, during the winding a first set of battery cells around a mandrel, winding a plurality of electrolyte layers between the anode and cathode material, the electrolyte layers centered between dielectric lanes in the anode and cathode material defining the first and second battery ropes.

87. (Withdrawn) The method of producing multiple battery ropes as defined in claim 81 further comprising, after the separating step, shooing ends of the battery ropes.

88. (Previously Presented) The method of claim 65, further comprising, prior to cutting and removing, winding a second battery cell a plurality of turns around the wound battery cell.

89. (Previously Presented) The method of claim 88, wherein winding the second battery cell a plurality of turns around the wound battery cell comprises winding the second battery cell a plurality of turns around the wound battery cell where the wound battery cell produces a first voltage and the second battery cell produces a second voltage.

90. (Previously Presented) The method of claim 88, further comprising coupling the wound and second battery cells in series.

91. (Previously Presented) The method of claim 88, further comprising coupling the wound and second battery cells in parallel.

92. (Previously Presented) The method of claim 88, further comprising, prior to cutting and removing, winding a third battery cell a plurality of turns around the second battery cell.

93. (Previously Presented) The method of claim 92, further comprising coupling the wound, second and third battery cells in series.

94. (Previously Presented) The method of claim 92, further comprising coupling the wound, second and third battery cells in parallel.

Application No.: 10/082,946
Amendment Dated August 19, 2004
Reply to Office Action of August 4, 2004

95. (Previously Presented) The method of claim 92, further comprising coupling two of the first, second or third battery cells in parallel.

96. (Previously Presented) The method of claim 75, further comprising coupling the first and second battery cells in series.

97. (Previously Presented) The method of claim 75, further comprising coupling the first and second battery cells in parallel.

98. (Previously Presented) The method of claim 75, further comprising winding a third battery cell a plurality of turns around the second battery cell.

99. (Previously Presented) The method of claim 98, further comprising coupling the first, second and third battery cells in series.

100. (Previously Presented) The method of claim 98, further comprising coupling the first, second and third battery cells in parallel.

101. (Previously Presented) The method of claim 98, further comprising coupling two of the first, second or third battery cells in parallel.